

Attorney Docket No. P14014  
Customer Number 27045

## **AMENDMENTS TO THE CLAIMS**

This listing of claims replaces all prior versions and listings of claims in the application.

### **Listing of Claims**

1. (Currently Amended) A method of handling the transmission of Radio Link Control (RLC) Protocol Data Units (PDUs) from a Radio Access Network (RAN) of a mobile telecommunications system to User Equipment (UE), the method comprising:

at a Gateway (GW) of the UTRAN, segmenting RLC Service Data Units (SDUs) into RLC PDUs for transmission to at least one Base Station (BS) of a set of BSs belonging to a handover link set, and combining RLC PDUs received from the at least one BSs into RLC SDUs for transmission to a core network of the system; and

at each of the at least one BS, buffering RLC PDUs received from at least one of the GW and the UE, and implementing an [[ARQ]] Automatic Repetition Request (ARQ) mechanism at each of the at least one BS to facilitate reliable transmission of RLC PDUs between the UE and the GW, the ARQ mechanism utilizing ARQ status messages sent over the air interface, between the UE and the BS(s), in order to acknowledge successfully transmitted data packets and request retransmission of unsuccessfully transmitted data packets.

2. (Original) A method according to claim 1, wherein a Packet Data Convergence Protocol (PDCP) sub-layer is located in the GW, and the RLC entity exchanges RLC SDUs (PDCP PDUs) with the PDCP sub-layer, whilst the PDCP sub-layer exchanges PDCP SDUs with the core network of the mobile telecommunications system.

3. (Original) A method according to claim 1, wherein a flow control mechanism is implemented between the BSs and the GW in order to minimise the buffer sizes at the BSs and to reduce the need for retransmission of data between the GW and a new BS when that new BS is added to the link set.

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4. (Original) A method according to claim 3, wherein, for data transfer in the downlink direction, each BS notifies the GW of PDUs which it has successfully sent and in response the GW issues Status\_Update messages to the BSs to cause them to update their sending windows.

5. (Original) A method according to claim 3, wherein, for data transfer in the uplink direction, RLC PDUs successfully received by a BS are passed to the GW and, when the GW has successfully constructed an SDU, an appropriate Status\_Update message is sent from the GW to the BSs of the handover link set to cause the BSs to discard all PDUs belonging to this SDU.

6. (Original) A method according to claim 1, wherein, in the downlink direction, RLC PDUs are sent from a Base Station (BS) of the Radio Access Network (RAN) to a UE, and each said data packet has a sequence number, the method comprising implementing at the BS the ARQ mechanism for resending data packets erroneously received by the UE and, upon receipt of an ARQ status message from the UE, advancing a transmission window of the BS so that its lower region covers the packet having the lowest sequence number for which an ARQ acknowledgement has not yet been received.

7. (Original) A method according to claim 1, wherein the GW communicates with a plurality of BSs of a soft handover (SHO) link set.

8. (Original) A method according to claim 7, wherein, in the downlink direction, RLC PDUs are sent from a Base Station (BS) of the Radio Access Network (RAN) to a UE, and each said data packet has a sequence number, the method comprising implementing at the BS the ARQ mechanism for resending data packets erroneously received by the UE and, upon receipt of an ARQ status message from the UE, advancing a transmission window of the BS so that its lower region covers the packet having the lowest sequence number for which an ARQ acknowledgement has

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not yet been received, and comprising exchanging ARQ status messages, successfully received over the air interface, between BSs of the SHO link set.

9. (Original) A method according to claim 8, wherein only one of the BSs of the SHO link set is transmitting to the UE.

10. (Original) A method according to claim 8, wherein in the downlink direction only one of the BSs of the SHO link set is transmitting to the UE but all other BSs seek to synchronise their buffers with the transmission buffer of the transmitting BS.

11. (Currently Amended) A mobile telecommunications system comprising a UMTS Universal Mobile Telephone System (UMTS) Terrestrial Radio Access Network (UTRAN) and, located in the UTRAN:

a Gateway (GW) arranged to segment ~~RLC SDUs into RLC PDUs~~ Radio Link Control (RLC) Service Data Units (SDUs) into RLC Protocol Data Units (PDUs) for transmission to at least one Base Station (BS) of a set of BSs belonging to a handover link set, and to combine RLC PDUs received from at least one of the BSs into RLC SDUs for transmission to a core network of the system; and

a plurality of Base Stations (BSs) arranged to form a soft handover link set for a given User Equipment (UE), each said BS being arranged to buffer RLC PDUs received from at least one of the GW and the UE and to implement an [[ARQ]] Automatic Repetition Request (ARQ) mechanism at each of the at least one BS to facilitate reliable transmission of RLC PDUs between the UE and the GW, the ARQ mechanism utilizing ARQ status messages sent over the air interface, between the UE and the BS(s), in order to acknowledge successfully transmitted data packets and request retransmission of unsuccessfully transmitted data packets.

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12. (Currently Amended) A Gateway for use in a UMTS Universal Mobile Telephone System (UMTS) Terrestrial Radio Access Network (UTRAN) in a mobile telecommunications system, comprising:

means for segmenting ~~RLC SDUs into RLC PDUs~~ Radio Link Control (RLC) Service Data Units (SDUs) into RLC Protocol Data Units (PDUs) for transmission to at least one Base Station (BS) of a set of BSs belonging to a handover link set, and

means for combining RLC PDUs received from at least one of the BSs into RLC SDUs for transmission to a core network of the system.

13. (Canceled)